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BRIEFER ARTICLES.

NEW SPECIES OF TRIMMATOSTROMA.

(WITH THREE TEXT FIGURES)

IN the summer of 1898 I had my attention called to the pathological condition of the balsams in many parts of the province of Ontario. The disease, however, had not as yet done much damage, a dead branch

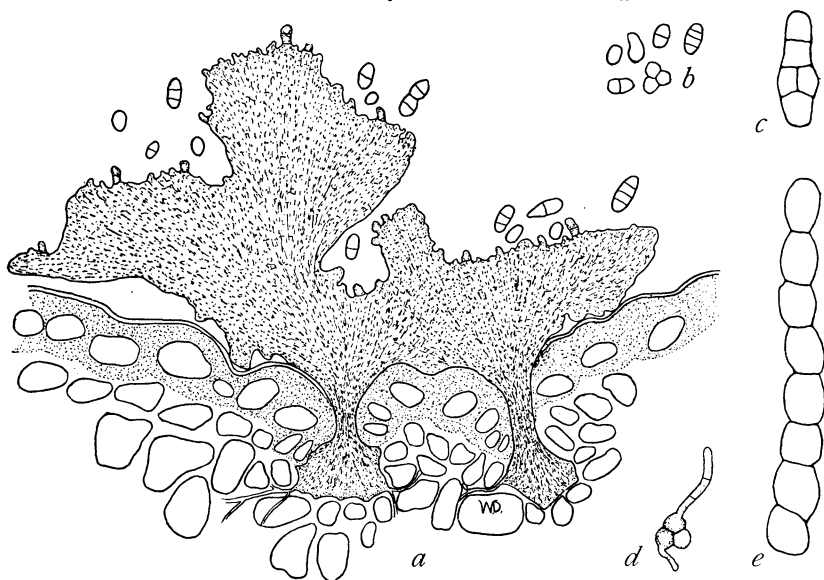


FIG. 1. *Trimmatostroma abietina*: *a*, cross section of a diseased leaf of *Abies balsamea*, showing the sporodochium (heavily shaded portion) and a number of loose conidia ($\times 450$); *b*, a group of conidia of various forms ($\times 450$); *c*, a single conidium ($\times 1060$); *d*, germinating conidium after thirty-six hours in hanging drop of water ($\times 450$); *e*, chain of unicellular conidia ($\times 1060$).

here and there being the only warning sign of what later proved itself to be a disastrous outbreak. The woods at that time presented a peculiar mottled appearance. It was thought at the time that in this case we had to deal with a fungus form of some kind, but all efforts to collect material having it in fructification proved futile. Sections of

the diseased leaves showed the presence of a much branched mycelium made up of hyphæ which were both intercellular and intracellular. Owing to an interruption of several months, caused by the pressure of classroom work and laboratory duties, no further observations were made until the following summer (1899). The progress of destruction during this interval as far beyond expectation. Trees which but nine months before showed only a dead branch or two had now entirely succumbed, and the disease was spreading rapidly, many new points of infection being noticed. Any doubts as to the full malignancy of the disease which may have existed when it first made its appearance were now dispelled, and it was but too evident that the injury to the balsam forests would be great. The diseased leaves at this time showed the presence of numerous black warty tubercles which proved to be the fruiting masses (sporodochia). A quantity of material was collected and brought to the laboratory for further examination and study. Pure cultures were made on many different media in tubes and plates, and great difficulty was experienced in obtaining a normal development and in many cases any growth at all. Blood serum (Loeffler's mixture for diphtheria cultures, no. 8), potato agar, potato, beef agar (acid, neutral, and alkaline), and nutrient gelatin, were all tried and found serviceable as indicated in the order mentioned. Hanging drop cultures were made from the plate cultures which proved pure. In many cases the spores refused to germinate in water. Those which germinated at all did so within thirty-six hours and the majority within twenty-four, a single germ tube being put out from each spore, or in some of the multicellular forms one from each cell (*fig. 1, d*). From observations which I have made upon cultures and sections of imbedded material, I would characterize the form as follows:

***Trimmatostroma abietina*, n. sp.**—Mycelium perennial, intercellular or intracellular, hibernating during the first winter in the tissues of

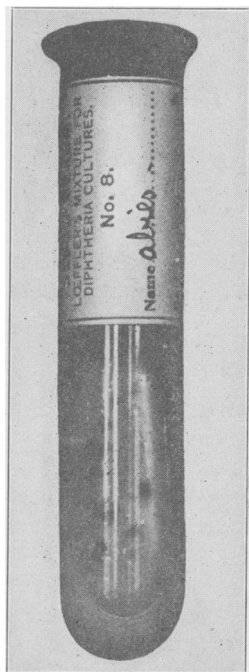


FIG. 2. A culture tube showing the growth of *Trimmatostroma abietina* upon blood serum.

the host, the following spring giving rise to conidiophores which issue from the tissues of the leaves and branches in dense fascicles forming a diffuse sporodochium. The conidiophores nearly hyaline or tinged olive brown, $4.5\mu \times 20-30\mu$, septate, sparsely branched, bearing the



FIG. 3. Forest scene in Ontario, near Guelp , showing the appearance of a diseased area.

conidia terminally. Conidia in chains of many different kinds, all of a dark brown olivaceous color, with epispore slightly roughened, the majority oblong or spherical, usually straight, a few inequilateral; some continuous, spherical, 5μ in diameter; others septate, 2 to

5-celled, 5 to $6\mu \times 8-16\mu$, not constricted at the septa; and a few of the muriform type, $5\mu \times 10\mu$.

It will readily be seen from these characters that the form belongs to the Hyphomycetes, and in this group to the "series" Tuberculariæ dermatiæ, "section" Phragmosporæ. Further than this its identification presents many difficulties. While a large majority of the conidia are horizontally septate, and hence must be classed under Phragmosporæ, a small number have a longitudinal septum, but owing to the fact that they are borne in chains the fungus must belong to the genus Trimmatostroma. A careful examination of the literature of the subject fails to show any reference to anything of a similar form upon any coniferous tree.

Although, so far, the only hosts upon which this species has been found are *Abies alba* and *Abies balsamea*, it is very probable that the spruces (*Picea*) are not immune. Further search will be made in the hope of discovering a more mature stage of this form.

I wish to acknowledge my indebtedness to Mr. B. T. Galloway and Miss Patterson, of Washington, D. C., for having kindly assisted me in the examination of material and reference literature.—M. W. DOHERTY, *Agricultural College, Guelph, Ontario*.

THE INTERNATIONAL BOTANICAL CONGRESS.

[Through the courtesy of our associate, Professor L. Guignard, we have received from the general secretary, M. E. Perrot, the following account of the recent meeting in Paris of the International Botanical Congress, whose sessions were held during the first ten days of October. The president of the Congress was M. le Dr. de Seynes, a former president of the Botanical Society of France; while the different sessions were presided over by MM. Drake del Castillo, Dutailly, Flahault, Mussat, and Rouy. Among the foreigners present, we note the names of Borzi, Burnat, Britton (N. L.), Chodat, Czapek, Dyer (Th.), Errera, Filarsky, Gallardo, Gamble, Greshoff, Istvanffi, Koltz, Magnus, Maiden, Micheli, Niederlein, Pfitzer, and others.—Eds.]

I. SUBJECTS INTRODUCED FOR DISCUSSION BY VARIOUS MEMBERS.

Methods of facilitating popular instruction concerning mushrooms.—The introductory address was given by M. Rolland, who was followed by several members in the presentation of opinions. It was voted finally that instruction in mycology should be given down to the primary school, beginning with the recognition of poisonous species, and especially species of *Amanita* and *Volvaria*, the eating of which is